

WHAT IS CLAIMED IS:

1 1. A diverter switch for branching off bulk-material
2 flows, having a rotary plug (1) disposed in a stationary
3 housing (2) having three connecting openings (4, 5, 6)
4 said rotary plug and housing providing a first position
5 connecting a first connecting-opening pair (4, 5) a second
6 position, connecting a second connecting-opening pair (4,
7 6), and a gap (10) disposed between said rotary plug (1)
8 and said housing wherein the improvement comprises a
9 rotary plug (1) and/or housing (2) having at least one
10 labyrinth seal arrangement (7), having at least one
11 labyrinth seal groove (8, 9), wherein the labyrinth seal
12 groove (8) of the rotary plug (1) is arranged largely
13 continuously around at least one opening of a through-
14 channel (3), and/or in that the labyrinth seal groove (9)
15 of the housing (2) is arranged largely continuously around
16 at least one of the connecting openings (4, 5, 6).

1 2. The diverter switch according to Claim 1, further
2 comprising a plurality of labyrinth seal grooves (8, 9)
3 arranged next to one another.

1 3. The diverter switch according to claim 1 or 2

2 further comprising at least one feed opening (12) for a
3 feed channel for feeding a gap fluid into the gap (10)
4 between rotary plug (1) and housing (2).

1 4. The diverter switch according to claim 1 or 2
2 further comprising a feed opening (12) in the labyrinth
3 seal groove (8, 9).

1 5. The diverter switch according to claim 1 or 2
2 further comprising means for insuring the pressure of the
3 gap fluid is greater than a pressure of the conveying
4 fluid.

1 6. The diverter switch according to claim 1 or 2
2 wherein the composition of the gap fluid is substantially
3 the same as the composition of the conveying fluid.

1 7. The diverter switch according to claim 1 or 2
2 wherein the maximum width (W) of the gap (10) is smaller
3 than or equal to five-tenths of a millimetre ($W \leq 5/10$
4 mm).

1 8. The diverter switch of claim 1 or 2 wherein the
2 maximum width (W) of the gap 10 is smaller than or equal
3 to three-tenths of a millimetre ($W \leq 3/10$ mm).

1 9. A fluid diverter device comprising:

2 (a) a housing having a plurality of through channels
3 and a seat for a rotatable plug;

4 (b) a rotatable plug disposed in said seat
5 selectively rotatably interconnecting at least one of said
6 plurality of through channels;

7 (c) a labyrinth seal having at least one seal groove
8 disposed between said housing and said rotatable plug; and

9 (d) a fluid gap seal disposed intermediate said
10 housing and said rotatable plug in communication with said
11 at least one seal groove of said labyrinth seal.

1 10. The fluid diverter of claim 9 further
2 comprising at least one feed channel in communication with
3 said fluid gap seal.

1 11. The fluid diverter of claim 10 further
2 comprising means for increasing the pressure of the gap
3 fluid to a pressure greater than the conveying fluid.

1 12. The fluid diverter of claim 9 wherein said at
2 least one groove is a plurality of grooves disposed on
3 said rotatable plug and disposed on said plurality of
4 channels.

1 13. The fluid diverter of claim 12 wherein said
2 plurality of grooves disposed on said rotatable plug and
3 said plurality of grooves disposed on said plurality of
4 channels are staggered.

1 14. A fluid device for diverting fluids comprising:
2 (a) a housing having a plurality of through channels
3 and a seat for a rotatable plug;
4 (b) a rotatable plug disposed in said seat
5 selectively rotatably interconnecting at least two of said
6 plurality of through channels;
7 (c) a labyrinth seal having a plurality of grooves
8 disposed in said rotatable plug or around at least one
9 opening of said plurality of through channels;
10 (d) a fluid gap seal disposed in said seat for said
11 rotatable plug or in said rotatable plug; and
12 (e) a fluid feed channel communicating with said
13 fluid gap seal.